

What Is Claimed Is:

1. A cooling device for cooling a heat-generating element, comprising:

two outer^(7A, 7B) plates;

a plurality of unit plates⁶ having the same shape, the unit plates being arranged to be stacked in a plate-thickness direction between the two outer plates; and

a plurality of radiating fins⁵ having the substantially same width as each unit plate in a width direction, the radiating fins being provided on a surface of one outer plate among the two outer plates, wherein:

each of the unit plates has a plurality of ^{6a}slits through which refrigerant vapor boiled and vaporized by heat from the heat-generating element flows, the slits being provided to dissipate heat of the refrigerant vapor from the one outer plate to an outside through the radiating fins,

with respect to the two outer plates, two or more sheets of the unit plates are arranged in parallel, and

the radiating fins are arranged on the one outer plate in parallel by the number corresponding to the unit plates arranged in parallel.

2. The cooling device according to claim 1, wherein, among the two outer plates, the other outer plate has a plurality of apertures⁴ communicating with the slits in each of the unit plates arranged in parallel, the cooling device further comprising

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a header communicating with the slits in each of the unit plates through the apertures.

3. The cooling device according to claim 1, further comprising

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a boiling unit in which liquid refrigerant is stored, the boiling unit having a surface onto which the heat-generating element is attached, wherein:

the unit plates are stacked between the two outer plates to construct a condensation unit for condensing refrigerant vapor boiled and vaporized in the boiling unit; and

the boiling unit and the condensation unit are¹
coupled together through a pipe.

4. The cooling device according to claim 1, wherein:

the unit plates are stacked between the two outer plates to form a hermetically-sealed refrigerant container in which boiling and condensation of refrigerant is repeated; and

among the two outer plates, the heat-generating element is attached onto a surface of the other outer plate.

5. A cooling device for cooling a heat-generating element, comprising:

a plurality of tubes in which refrigerant flows;

a refrigerant container in which refrigerant is

sealed, the refrigerant container having a plurality of unit plates connected to one side ends of the tubes to communicate with the tubes, and having a surface onto which the heat-generating element is attached; and

a header tank having a plurality of unit plates connected to the other side ends of the tubes, through which the tubes communicate with each other, wherein:

refrigerant boiled and vaporized within the refrigerant container by heat from the heat-generating element flows into the tubes to perform heat exchange with outside air;

the tubes arranged in parallel in each unit plate construct a tube group;

the tubes in the tube group are inserted into the unit plate of the refrigerant container and the unit plate of the header tank to construct a core unit; and

a plurality of the core units are arranged.

6. The cooling device according to claim 5, wherein the tube group is constructed by the tubes arranged in parallel in a direction crossing with an air-flowing direction.

7. The cooling device according to claim 5, wherein the tube group is constructed by the tubes arranged in parallel in the air-flowing direction.

8. The cooling device according to claim 5, wherein each of the refrigerant container and the header tank is a laminated structure in which a plurality of flat plate members are laminated.

9. The cooling device according to claim 5, wherein the core unit has a plurality of fins each of which is disposed between adjacent tubes.

10. The cooling device according to claim 9, wherein the fin is a corrugate fin.

11. The cooling device according to claim 5, wherein the core units having different air-flowing resistances are arranged.

12. The cooling device according to claim 5, wherein the core units having different intervals between adjacent the tubes are arranged.

13. The cooling device according to claim 5, wherein the tube group includes an outer tube at an outermost side in the laminating direction of the tubes, and the outer tube has an insert inserted into the unit plate.

14. The cooling device according to claim 8, wherein:

among the flat plate members, a flat plate member arranged on the outermost side has a pawl; and the flat plate members are fixed by the pawl.

15. The cooling device according to claim 5, wherein the tube is a flat tube.

16. The cooling device according to claim 9, wherein:

each of the fins has a plate-like base portion extending in the air-flowing direction, and a wall portion bent from the base portion, for abutting against a wall surface of the tube; and

the fins are stacked in a tube longitudinal direction.

17. The cooling device according to Claim 16, wherein:

the base portion of each fin has an upstream wall portion contacting the tube positioned on the most upstream air side, and a downstream wall portion contacting the tube positioned on the most downstream air side; and

the base portion extends from the tube positioned on the most upstream air side to the tube positioned on the most downstream air side.